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FUTURE UNIVERSITIES IN SMART CITIES HOW TO MAKE SMART USE OF A UNIVERSITY HOSPITAL

Abstract:
Scientific institutions have a significant impact on the development and growth of regions. These include economic and social impacts ranging from the offer of employments and trainee positions to the economy's supply side with qualified labor force, the provision of information and transfer of knowledge and technology as well as cultural opportunities.
This holds in particular for university hospitals with their wealth of different disciplines extending into other academic fields and attracting additional research institutes for intense collaboration. Considering this situation leads immediately to the question, how to make best or "smart" use of an institution, such as a university hospital, that a larger city needs anyway? The term "smart" use refers, of course, to the economic impact, which is associated with this institution.
However, before it is possible to provide a thorough answer to this question, we have to classify the various potential effects. There are, first of all, the so-called demand effects, pointing to resources the institution consumes, because it employs medical and administrative personnel, because it teaches and trains medical students, because it needs a large variety of medical supplies, and because it constantly needs to repair equipment and buildings or invest in new ones.
The so-called supply effects are more difficult to investigate. They refer in particular to the attractiveness of the institution – due to its research activities, or due to the quality of the students leaving the institution with an academic degree – for other public or private research institutes settling in

the neighborhood of the university hospital (sometimes referred to as "knowledge spillover").

The paper focuses in a first step on the demand effects, which include, however, also the demand effects associated with the institutions attracted through the university hospital. By comparing these effects for university hospitals in different regions or countries, it is possible to get some insight into the framework conditions, of relevance for strong supply effects. In a second step, the required conditions for an "optimal" regional impact leading to substantial employment effects or outstanding innovation activities have to be investigated. This will then allow to optimize the framework conditions for the university hospital, to make "smart" use of this institution.

The methodology is characterized by an incidence analysis and specifies the Keynesian multiplier analysis in order to provide a framework for discovering and quantifying several regional economic effects and applies this analysis to university hospitals in Germany and Russia. The quantitative analysis shows the importance of these institutions for regional economic development. Differences regarding the size of the various multipliers result from differences in relevant framework conditions, thus providing room for policy implications.

The analysis investigates the university hospital in Leipzig (UML) in Germany, and the Siberian State Medical University (SSMU) in Tomsk, Russia. Both institutions have a long history as research institutions, UML is larger in terms of the number of employees and the number of students, however SSMU serves a much larger area than UML. Moreover, these areas are different regarding climatic and geographic conditions and regarding the density of the population.

The results based on direct, indirect and induced demand effects show that UML reveals an employment multiplier of approximately 2, and SSMU of appropriately 1.5, implying that each full-time position in the hospitals leads to an additional full-time position in the vicinity of UML, and to an additional half-time position in the vicinity of SSMU. A more careful analysis shows that UML succeeds in attracting more additional research institutions, although SSMU supports more employees in the supplier industries.

Summarizing, the analysis points to significant differences regarding supply effects originating from university hospitals. Thus, it should be the concern of "smart" cities to make "smart" use of their university hospitals. A more detailed analysis regarding the second step mentioned above is required to provide further insight into the relevant framework conditions.